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(FILE 'HOME' ENTERED AT 03:14:00 ON 14 MAR 2003)  
FILE 'REGISTRY' ENTERED AT 03:14:11 ON 14 MAR 2003

L1 8018 S BISPHENOL  
L2 35388 S CARBONIC ACID AND (ESTER OR DIESTER)  
L3 237 S L1 AND L2  
E TETRAMETHYL AMMONIUM HYDROXIDE/CN  
L4 1 S 75-59-2  
SEL NAME L4  
FILE 'CA' ENTERED AT 03:22:26 ON 14 MAR 2003  
L5 4426 S L4 OR E1-15  
L6 11028 S L1 AND L2 AND (POLYMER? OR POLYCARBONATE)  
L7 10496 S L3  
L8 1139 S L6-7 AND CATALY?  
L9 139 S L8 AND L5  
L10 138 S (L9 NOT PY>2000)OR(L9 AND PATENT/DT)  
L11 7 S L8 AND(SCREEN? OR DISCOVER? OR IDENTIF? OR EVALUAT? OR ASSESS? OR  
EXAMIN? OR TEST?) (6A)CATALY?  
L12 1 S L8 AND COMBINATOR?  
L13 145 S L10-12

=> d bib,ab 1-145

L13 ANSWER 12 OF 145 CA COPYRIGHT 2003 ACS  
AN 137:20770 CA  
TI Use of gradient mixtures for **screening** and optimization of **catalysts** for  
the production of condensation **polymers**  
IN Lemmon, John Patrick; Wroczynski, Ronald James; Siclovan, Oltea Puica  
PA General Electric Company, USA  
SO PCT Int. Appl., 37 pp.  
PI WO 2002045844 A2 20020613 WO 2001-US46417 20011102  
PRAI US 2000-729938 A 20001206  
AB A method of making and **screening** an array of **catalysts** comprises: (a)  
combining a first **polymn.** precursor material, a second **polymn.** precursor  
material and a first **catalyst** in a first region on a substrate; (b)  
combining a first **polymn.** precursor material, a second **polymn.** precursor  
material and a second **catalyst** in a second region on a substrate; (c)  
reacting the first and second **polymn.** material in said first and second  
regions; and (d) screening said first and second regions of said substrate  
for a measurable property or properties. Bisphenol A and diphenylcarbonate  
were copolymd. in the presence of LiOH, CsOH, or KOH.

L13 ANSWER 23 OF 145 CA COPYRIGHT 2003 ACS  
AN 136:6536 CA  
TI Melt **polycarbonate polymerization catalyst** systems  
IN Lemmon, John Patrick; McCloskey, Patrick Joseph; Siclovan, Oltea Puica  
PA General Electric Company, USA  
SO U.S., 10 pp.  
PI US 6323304 B1 20011127 US 2001-760086 20010112  
PRAI US 2001-760086 A 20010112  
AB This invention provides a method for prepg. **polycarbonates**, which utilizes  
polycondensation **catalysts** of the formula Ax+MF6-x, wherein A is an alkali  
metal or alk. earth cation; M is a transition metal of group IVA or VA, or  
M is a p-block metal of group IIIB, IVB or VB; and x is 1, 2, or 3. We  
have found that this new class of **catalysts** provide excellent **polymn.** rates  
for the prepn. of Bisphenol A **polycarbonate** from the melt **polymn.** of di-Ph  
carbonate and Bisphenol A. Moreover, the **catalysts** of the invention were

found to be very selective in substantially reducing the level of branching side reaction, i.e., formation of Fries product, normally assocd. with the melt **polycarbonate** process.

L13 ANSWER 24 OF 145 CA COPYRIGHT 2003 ACS

AN 135:289196 CA

TI Mixed dialkali metal salts of sulfuric acid containing cesium as **polycarbonate polymerization catalysts**

IN McCloskey, Patrick Joseph; Burnell, Timothy Brydon; Smigelski, Paul Michael, Jr.; Nisoli, Alberto

PA General Electric Co., USA

SO U.S., 6 pp.

PI US 6300460 B1 20011009 US 2000-612652 20000706

PRAI US 2000-612652 A 20000706

AB The method for prepg. a **polycarbonate** with low branched byproducts by a melt process comprises reacting a diphenol (e.g., bisphenol A) with a diaryl carbonate (e.g., di-Ph carbonate) at 100-350° in the presence of a **catalyst** system comprising a mixed dialkali metal salt of sulfuric acid contg. at least one cesium equiv. (e.g., NaCsSO<sub>4</sub>) and a base (e.g., **tetramethylammonium hydroxide**).

L13 ANSWER 27 OF 145 CA COPYRIGHT 2003 ACS

AN 135:153241 CA

TI Salts of nonvolatile acids as **catalysts** in melt **polymerization**

IN McCloskey, Patrick Joseph; Burnell, Timothy Brydon; Smigelski, Paul Michael, Jr.

PA General Electric Company, USA

SO PCT Int. Appl., 31 pp.

PI WO 2001057111 A1 20010809 WO 2000-US29019 20001019

US 6316578 B1 20011113 US 2000-497938 20000204

PRAI US 2000-497938 A 20000204

AB A **polycarbonate** with minimized undesirable reaction products such as branched side reaction products is prepd. by melt-**polymg.** a diphenol with a diaryl carbonate in the presence of a **catalyst** system contg. an alkali and/or alkali earth metal salt of a nonvolatile acid and a base. Thus, 0.6570 mol bisphenol A and 0.7096 mol di-Ph carbonate were melt-**polymd.** in the presence of NaH<sub>2</sub>PO<sub>3</sub> and tetra-Me ammonium hydroxide to give **polymer** having no. av. mol. wt. 5547 and fries product 163 ppm.

L13 ANSWER 31 OF 145 CA COPYRIGHT 2003 ACS

AN 134:252754 CA

TI Testing array and method for small-scale evaluation of **polymerization** reactions in thin layers

IN Carnahan, James Claude; Lemmon, John Patrick; Potyrailo, Radislav Alexandrovich; Leib, Terry Kay; Warner, Gregory Lee

PA General Electric Company, USA

SO PCT Int. Appl., 35 pp.

PI WO 2001021301 A1 20010329 WO 2000-US24536 20000908

US 6307004 B1 20011023 US 1999-398677 19990920

PRAI US 1999-398677 A 19990920

AB A method for conducting parallel **polymn.** reactions in an array of reaction vessels, in which each reaction mixt. for each vessel comprises monomers embodied in a liq. such that the reactants form a film with a thickness sufficient to allow the **polymn.** rate to be essentially independent of mass transfer limitations. The reactions are then carried out, optionally in the presence of a **catalyst**, such that the homogeneity of the reaction mixt. is maintained without stirring. Such reactions (esp. for synthesis of **polycarbonates**, in which the reaction is driven by the volatility of a

released byproduct) can be carried out on <50 mg reactant mixt. The method is useful for testing reactants, catalysts, and assocd. reaction parameters.

L13 ANSWER 38 OF 145 CA COPYRIGHT 2003 ACS

AN 133:335675 CA

TI Preparation of copolycarbonate by solid state **polymerization**

IN Chatterjee, Gautam; Varadarajan, Godavarthi Satyanarayana; Day, James; McCloskey, Patrick Joseph; Idage, Bhaskar Bhairavnath; King, Joseph Anthony, Jr.; Jadhav, Arun Savalaram

PA General Electric Co., USA

SO U.S., 6 pp.

PI US 6143859 A 20001107 US 1999-370433 19990809

US 6333394 B1 20011225 US 1999-379234 19990823

PRAI US 1999-370433 A2 19990809

AB The copolycarbonates contg. structural units such as birefringence-reducing or "soft block" units are prepd. by mixing (A) a precursor **polycarbonate** (e.g., bisphenol A **polycarbonate** prepd. from di-Ph carbonate and bisphenol A) with (B) a monomeric or **polymeric** source having structural features different from A (e.g., 6,6'-dihydroxy- 3,3,3',3'-tetramethyl-1,1'-spiro(bis)indane and/or polyoxyalkylene glycol) at 170-250° to form a precursor copolycarbonate; converting the precursor copolycarbonate into a precursor copolycarbonate having enhanced crystallinity, and subjecting the precursor copolycarbonate of enhanced crystallinity to a state **polymn.**

L13 ANSWER 51 OF 145 CA COPYRIGHT 2003 ACS

AN 132:123407 CA

TI Synthesis of optical quality **polycarbonates** with reduced static charge and optical information storage media therefrom

IN Inoue, Kazushige; Ishida, Hiromi; Shimoda, Tomoaki; Hoeks, Theodorus L.; Van Hout, Henricus H. M.; Marugan, Monica M.; Dardaris, David M.; McCloskey, Patrick J.

PA General Electric Co., USA

SO U.S., 4 pp.

PI US 6022943 A 20000208 US 1999-287668 19990407

PRAI US 1999-287668 A1 19990407

AB Increasing the endcap level to a level greater than about 90% for optical quality melt **polycarbonate** significantly reduces the as-molded static charge for injection molded parts for optical disk applications. The use of resins with higher endcap levels in combination with antistatic additives provides a highly robust formulation suitable for even the most demanding emerging formats as digital versatile disk (DVD) and in all com. optical media molding machines. Thus, optical quality **polycarbonates** are prepd. by performing a base-catalyzed **polymn.** of a diaryl carbonate such as di-Ph carbonate and a dihydric phenol such as bisphenol A under conditions effective to produce a **polycarbonate** product having an endcap level of 90% or greater.

L13 ANSWER 52 OF 145 CA COPYRIGHT 2003 ACS

AN 131:337546 CA

TI Carbonic diester, aromatic **polycarbonate**, production apparatus, and process for production

IN Sasaki, Katsushi; Funakoshi, Wataru; Sawaki, Toru; Hirata, Masumi; Kaneko, Hiroaki; Abe, Masanori; Simonaru, Masasi; Takemoto, Hidemi; Matsuo, Jyuhou; Matsuoka, Yoshiki

PA Teijin Limited, Japan

SO PCT Int. Appl., 95 pp.

PI WO 9955764 A1 19991104 WO 1999-JP2141 19990422

US 6323302 B1 20011127 US 1999-445824 19991214  
 PRAI JP 1998-116864 A 19980427

AB A process for producing, through melt **polymn.**, an arom. **polycarbonate** reduced in coloring and improved in thermal stability, hue, etc. by keeping the pressure inside a starting-material dissoln. vessel and the linear velocity of a gas in a transport piping in resp. given ranges, keeping the concn. of a basic nitrogen compd. in a specific range, recycling a byproduct contg. impurities in a specific amt., reducing the contents of nitrogen compds., metallic elements, and salicylic acid derivs. in a carbonic diester to resp. given values, using a reactor made of a specific material, and/or using a reactor having an oxide layer formed on the inner wall surface thereof.

L13 ANSWER 57 OF 145 CA COPYRIGHT 2003 ACS  
 AN 131:19450 CA  
 TI Manufacture of aromatic **polycarbonates** using transition metal compounds and alkali and/or alkaline metal compounds as **catalysts**  
 IN Kashiwagi, Takeshi; Kimura, Masatoshi; Kishiro, Osamu  
 PA Mitsubishi Chemical Industries Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 7 pp.  
 PI JP 11158261 A2 19990615 JP 1997-329884 19971201  
 PRAI JP 1997-329884 19971201

AB Title arom. **polycarbonates** are manufd. by transesterification of allyl carbonates and arom. dihydroxy compds. using **catalysts** contg. transition metal compds. and alkali metal and/or alk. earth metal compds. Thus, bisphenol A and di-Ph carbonate were **polymd.** in the presence of Na<sub>2</sub>CO<sub>3</sub> and La(OH)<sub>3</sub> to give a copolymer with viscosity-av. mol. wt. 24,500 and yellowing index 5.4 initially and 1.1 after heating.

L13 ANSWER 59 OF 145 CA COPYRIGHT 2003 ACS  
 AN 130:96029 CA  
 TI Preparation of aromatic **polycarbonates** with good color tone and thermal stability in high productivity by transesterification method  
 IN Kashiwagi, Takeshi; Kimura, Masatoshi  
 PA Mitsubishi Chemical Industries Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 PI JP 11005837 A2 19990112 JP 1997-160861 19970618  
 PRAI JP 1997-160861 19970618

AB Title **polycarbonates**, useful for moldings, are prepd. by transesterifying carbonate precursors and arom. dihydroxy compds. in the presence of metals or metal compds. and crown compds. as transesterification **catalysts**. Thus, 20.0 mol bisphenol A and 21.4 mol di-Ph carbonate were **polymd.** in the presence of La hydroxide, dibenzo-18-crown-6, and Me<sub>4</sub>NOH to give a **polymer** having viscosity-av. mol. wt. 21,600, good color tone, and thermal stability.

L13 ANSWER 62 OF 145 CA COPYRIGHT 2003 ACS  
 AN 129:189814 CA  
 TI Aromatic **polycarbonates** with good thermal aging and discoloration resistances and their preparation  
 IN Hirata, Shigemi; Funakoshi, Wataru; Sasaki, Katsushi  
 PA Teijin Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 14 pp.  
 PI JP 10204170 A2 19980804 JP 1997-12384 19970127  
 PRAI JP 1997-12384 19970127

AB Title **polycarbonates**, which show lowering rate [LR; after heating a 2 mm-thick board (molded from the obtained **polycarbonate**) at 150° under air for 10 days] of intrinsic viscosity ( $\eta$ ; at 20° in CH<sub>2</sub>Cl<sub>2</sub>)  $\leq 5\%$  and color

difference ( $\Delta E$ )  $\leq 10$ , are prepd. by (1) melt-**polymg.** (A) arom. diols and (B) carbonate diesters in the presence of  $1 \times 10^{-7}$ - $1 \times 10^{-5}$  mol [based on 1 mol diols] alkali metal compds. and/or  $1 \times 10^{-5}$ - $1 \times 10^{-3}$  mol N-contg. basic compds. as **catalysts** and (2) mixing with 1-200 ppm (based on the obtained **polycarbonates**) R11SO3PR12R13R14R15 (R11 = C1-40 alkyl, aryl; R12-15 = C1-10 alkyl) and 50-2000 ppm phenolic compds. I or II (a, e = 2-5; b = 2-20) and/or 50-2000 ppm S[(CH2)gCO2CHh2h+1]2 (g = 2-5, h = 2-20) or [CkH2k+1S(CH2)lCO2CH2]4C (k = 2-20, l = 2-5) when reached to  $\eta$  0.1. Thus, 228 parts bisphenol A and 225 parts di-Ph carbonate were melt-**polymd.** in the presence of 0.00027 part bisphenol A di-Na salt and 0.0091 part Me4NOH and mixed with 10 ppm p-C12H25C6H4SO3PBU4 and 0.13 ppm I (a = 2; b = 18) to give a **polycarbonate** having  $\eta$  = 0.51, LR = 1%, and  $\Delta E$  = 8.

L13 ANSWER 66 OF 145 CA COPYRIGHT 2003 ACS

AN 128:141220 CA

TI Method for preparing **polycarbonate** by solid-state **polymerization**

IN Varadarajan, Godavarthi Satyanarayana; Sivaram, Swaminathan; Idage, Bhaskar Bhairavnath; King, Joseph Anthony, Jr.

PA General Electric Co., USA

SO U.S., 8 pp., Cont.-in-part of U.S. Ser. No. 653,166.

PI US 5717056 A 19980210 US 1996-767740 19961217

US 5710238 A 19980120 US 1996-653166 19960524

PRAI US 1996-653166 A2 19960524

AB The method comprises an initial step of converting a precursor **polycarbonate** to an enhanced crystallinity precursor **polycarbonate** and a 2nd step of **polymg.** the enhanced crystallinity precursor **polycarbonate** in the solid state. Several options are employed, including modifying the precursor **polycarbonate** by contact with a dihydroxy compd. or diaryl carbonate, conversion of the precursor **polycarbonate** to the enhanced crystallinity **polymer** by contact with  $\geq 1$  compd. selected from alkali metal hydroxides, tetraalkylammonium hydroxides, tetraalkylammonium carboxylates, tetraalkylphosphonium hydroxides and tetraalkylphosphonium carboxylates, and conducting the solid-state **polymn.** in the presence of a **catalytic** amt. of  $\geq 1$  tetraalkylammonium or tetraalkylphosphonium carboxylate. The preferred tetraalkylammonium compds. are tetramethylammonium maleate and **tetramethylammonium hydroxide**. **Polymn.** may be conducted in the presence of a solvent resistance-imparting monomer such as hydroquinone or resorcinol or a branching agent such as 1,1,1-tris(4-hydroxyphenyl)ethane.

L13 ANSWER 77 OF 145 CA COPYRIGHT 2003 ACS

AN 127:66348 CA

TI Manufacture of **polycarbonates** with high throughput using recycled sources

IN Inoki, Satoshi; Motoyama, Yoshio; Matsuoka, Hideto; Daikichi, Hajime; Tanaka, Michio; Shimoda, Tomoaki; Kanazawa, Akio; Uno, Kazutoyo

PA Jem Pc K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 14 pp.

PI JP 09165443 A2 19970624 JP 1995-327099 19951215

US 5760156 A 19980602 US 1996-764816 19961212

PRAI JP 1995-327099 A 19951215

AB In the process, where dialkyl carbonates are melt-condensed with arom. hydroxy compds. (I) and **polymd.** with arom. dihydroxy compds. in the presence of N-contg. basic **catalysts** (II), I are sepd. from the **polymn.** system, freed of II, and recycled for the condensation system. Thus, 3.3 kmol/h di-Me carbonate was condensed with 0.94 kmol/h PhOH at 179-206° in the presence of Ti tetraphenoxide and **polymd.** with equimolar (vs. resulted di-Ph carbonate) bisphenol A at 180° in the presence of Me4NOH and NaOH to give a **polycarbonate** (intrinsic viscosity 0.49 dL/g), while generated PhOH was sepd. from the **polymn.** system by evapn., treated with p-toluenesulfonic

acid, evapd., and recycled for the initial condensation step.

L13 ANSWER 79 OF 145 CA COPYRIGHT 2003 ACS

AN 127:18172 CA

TI Aromatic **polycarbonates** with good fluidity and moisture resistance and their manufacture

IN Nakae, Mitsugu; Ishikawa, Yasuhiro; Sato, Sadayuki

PA Idemitsu Kosan Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 12 pp.

PI JP 09087375 A2 19970331 JP 1995-239481 19950919

US 5942594 A 19990824 US 1998-43125 19980319

PRAI JP 1995-239481 19950919

AB The **polycarbonates** show viscosity-av. mol. wt. (Mv)  $\geq 10,000$ , comprise repeating units p-OC<sub>6</sub>H<sub>4</sub>CR<sub>1</sub>R<sub>2</sub>C<sub>6</sub>H<sub>4</sub>OC(O) (R<sub>1</sub>, R<sub>2</sub> = H, C<sub>1</sub>-7 alkyl which may form ring), and contain  $\leq 100$  ppm Ph salicylate (I) repeating units in the main chain. The **polycarbonates** are manufd. by transesterifying (A) arom. dihydroxy compds. p-HOC<sub>6</sub>H<sub>4</sub>CR<sub>1</sub>R<sub>2</sub>C<sub>6</sub>H<sub>4</sub>OH (R<sub>1</sub>, R<sub>2</sub> are same as above) and (B) carbonic acid diesters in the presence of (C) **polymn. catalysts** composed of N-contg. org. basic compds. and quaternary phosphonium salts. Thus, 1.00 mol bisphenol A and 1.06 mol di-Ph carbonate were **polymd.** at 180-270° in the presence of p-cumylphenol, **tetramethylammonium hydroxide**, and tetrabutylphosphonium hydroxide to give a transparent viscous **polymer** with Mv 15,500, I content 30 ppm, and MFR (at 280°, 160 kg/cm<sup>2</sup>)  $35 \times 10^{-2}$  mL/s. The **polycarbonate** was press-molded at 280° and steamed for 48 h at 121° to show no crack.

L13 ANSWER 86 OF 145 CA COPYRIGHT 2003 ACS

AN 126:277892 CA

TI Manufacture of hydrolysis-resistant aromatic **polycarbonates**

IN Abe, Masanori; Kaneko, Hiroaki; Funakoshi, Wataru; Sasaki, Katsuji

PA Teijin Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

PI JP 09059369 A2 19970304 JP 1995-220371 19950829

PRAI JP 1995-220371 19950829

AB The **polymers** are manufd. by melt polycondensation of arom. diols and diaryl carbonates in the presence of **catalysts** contg. (A) N-contg. basic compds., (B) alkali metal compds. and/or alk.-earth metal compds., and (C) R<sub>1</sub>R<sub>2</sub>SiR<sub>3</sub>R<sub>4</sub> and/or (OSiR<sub>5</sub>R<sub>6</sub>)<sub>n</sub> [R<sub>1</sub>-R<sub>6</sub> = (O-contg.) C<sub>1</sub>-20 hydrocarbyl, OH, halo, H; n  $\geq 1$ ]. Thus, bisphenol A (I) and di-Ph carbonate were heated at 140-220° for 5.5 h in the presence of Me<sub>4</sub>N+OH-, I disodium salt, and Si(OEt)<sub>4</sub> to give a **polymer** with L/b value 67/1.0, haze 0.2%, and good hydrolysis resistance.

L13 ANSWER 87 OF 145 CA COPYRIGHT 2003 ACS

AN 126:238820 CA

TI Manufacture of **polycarbonates** with good color tone and low amount of impurities

IN Abe, Masanori; Funakoshi, Wataru; Sasaki, Katsuji; Kaneko, Hiroaki

PA Teijin Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

PI JP 09040768 A2 19970210 JP 1995-196412 19950801

PRAI JP 1995-196412 19950801

AB The **polycarbonates** are manufd. by melt polycondensation of arom. diols with diaryl carbonates in the presence of **catalysts** consisting of (A) N-contg. basic compds., (B) alkali metal compds. and/or alk.-earth metal compds., and (C) hindered phenols. Thus, 228 parts bisphenol A and 220 parts di-Ph carbonate were treated at 140-270° for 5 h under reduced pressure in the presence of Me<sub>4</sub>NOH  $1.0 \times 10^{-4}$ , bisphenol A disodium salt  $5.0 \times 10^{-6}$ , and

octadecyl 3-(4-hydroxy-3',5'-di-tert-butylphenyl) propionate  $5.0 \times 10^{-4}$  mol (based on 1 mol bisphenol A) to give a **polymer** with sp. viscosity 0.57, L/b value for a 3 mm-thick injection-molded plate 65/1.2, haze for the same plate 0.2, and low amt. of black impurities.

L13 ANSWER 88 OF 145 CA COPYRIGHT 2003 ACS

AN 126:172068 CA

TI Continuous manufacture of aromatic **polycarbonates** with improved color and less gel formation

IN Sawaki, Tooru; Shimonari, Masashi; Sasaki, Katsuji; Muraoka, Takeshi

PA Teijin Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

PI JP 08337648 A2 19961224 JP 1995-146286 19950613

PRAI JP 1995-146286 A3 19950613

AB Title **polymers** are manufd. by continuous transesterification of arom. dihydroxy compds. and  $\geq 1$  arom. carboxylic acid diesters selected from di-Ph carbonate, ditolyl carbonate, bis(chlorophenyl) carbonate, m-cresyl carbonate, dinaphthyl carbonate, and bis(diphenyl) carbonate in the presence of  $\geq 1$  **catalysts** selected from alkali metal compds., alk. earth metal compds., and N-contg. basic compds. in a reaction app. having vertical mixers and monoaxial horizontal reactors in series, which are equipped with two disks supported on rotating axis on the both ends of the reactor and multiple hollow disks fixed via mixing blades inclined or curved against rotation direction. Thus, a 1:101 mol mixt. of bisphenol A and di-Ph carbonate was fed to a vertical mixer at 60 kg/h and heated at 180-250° and 30-100 Torr in the presence of Na<sub>2</sub> bisphenol A to obtain a prepolymer (intrinsic viscosity 0.40), which was continuously fed to a horizontal reactor and **polymd.** at 270° and 1 Torr to give a **polymer** with intrinsic viscosity 0.40, L value 64.3, b value -0.1, and low gel formation.

L13 ANSWER 89 OF 145 CA COPYRIGHT 2003 ACS

AN 126:157959 CA

TI Manufacture of aromatic **polycarbonates** by transesterification

IN Sawaki, Tooru; Sasaki, Katsuji; Muraoka, Takeshi; Shimonari, Masashi

PA Teijin Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

PI JP 08333447 A2 19961217 JP 1995-140583 19950607

PRAI JP 1995-140583 19950607

AB The manuf. comprises transesterification of arom. dihydroxy compds. and arom. dicarbonates in the presence of **catalysts** while removing generated arom. monohydroxy compds. under reduced pressure which are condensed and collected at exhaust ports of vacuum pumps connected to the **polymn.** reactors. Thus, a bisphenol A-diphenyl carbonate copolymer with intrinsic viscosity 0.50, L value 64.2, and b value 0.1 was obtained in the presence of bisphenol A di-Na salt and Me<sub>4</sub>N(OH) while removing PhOH.

L13 ANSWER 90 OF 145 CA COPYRIGHT 2003 ACS

AN 126:157958 CA

TI Manufacture of aromatic **polycarbonates** with good color and low gel contents by transesterification

IN Sawaki, Tooru; Hirata, Shigeki; Shimonari, Masashi; Sasaki, Katsuji

PA Teijin Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

PI JP 08333446 A2 19961217 JP 1995-139156 19950606

PRAI JP 1995-139156 19950606

AB Arom. **polycarbonates** are manufd. by stepwise transesterification of arom. dihydroxy compds. and arom. dicarbonates in the presence of alkali metals

and/or alk. earth metals as **catalysts** whose concns. are kept low at **polymer** intrinsic viscosity ( $\eta$ )  $\leq 0.35$  and high at  $\eta \geq 0.35$ . Thus, melting 1 mol bisphenol A (I) and 1.03 mol di-Ph carbonate at 150°, reacting at 180° and 30 torr in the presence of  $2 \times 10^{-6}$  equiv (for 1 mol I) bisphenol A di-Na salt (II) and  $1 \times 10^{-4}$  mol (for 1 mol I) Me<sub>4</sub>N(OH) in 9:1 a mixt. of PhOH and H<sub>2</sub>O while removing generated PhOH, and further reacting at 170° and 1 torr while removing generated PhOH gave a prepolymer with  $\eta$  0.35, which was **polymd.** at 270° and 1 torr in the presence of  $1.8 \times 10^{-5}$  equiv (for I) II to give a **polycarbonate** with  $\eta$  0.6 with L value 64.3 and b value 0.2.

L13 ANSWER 92 OF 145 CA COPYRIGHT 2003 ACS

AN 125:276903 CA

TI Manufacture of aromatic **polycarbonates** with good heat resistance and color phase

IN Sasaki, Katsuji; Funakoshi, Wataru; Hirata, Shigeki; Abe, Masanori

PA Teijin Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 11 pp.

PI JP 08208825 A2 19960813 JP 1995-15058 19950201

PRAI JP 1995-15058 19950201

AB The **polycarbonates** are prepd. by melt condensation of arom. dihydroxy compds. and diaryl carbonates in the presence of **catalysts** consisting of N-contg. basic compds., alkali and/or alk. earth metal compds., and cyclic Al compds. I (Ra, Rb, Rc = C1-20 monovalent hydrocarbons). Thus, 228 parts bisphenol A (II), 220 parts di-Ph carbonate,  $1 \times 10^{-4}$  mol (on 1 mol II) **tetramethylammonium hydroxide**,  $1.0 \times 10^{-5}$  mol II disodium salt, and  $5.0 \times 10^{-5}$  mol Al compd. were mixed, melted at 140°, heated at 180-270°, and **polymd.** for 2 h to give a **polymer** having intrinsic viscosity 0.52, haze 0.2 and good filterability.

L13 ANSWER 93 OF 145 CA COPYRIGHT 2003 ACS

AN 125:248860 CA

TI Producing **polycarbonates** with excellent color and heat and water resistance by transesterification

IN Kuze, Shigeki; Tanaka, Kenji; Suga, Kouichi; Seino, Yoshikatsu; Shishikura, Akihiro; Kunishi, Noriyuki

PA Idemitsu Kosan Co., Ltd., Japan

SO PCT Int. Appl., 94 pp.

PI WO 9623832 A1 19960808 WO 1996-JP178 19960131

US 5922826 A 19990713 US 1997-875402 19970731

PRAI JP 1995-14483 A 19950131

AB The title process is carried out using **polymn. catalysts** comprising (1) a combination of a nitrogenous org. base compd. and a quaternary phosphonium salt, (2) a tetraarylphosphonium salt having a specific structure or (3) a quaternary phosphonium salt having a specific structure bearing a branched alkyl group, by prepolymn. and subjecting the prepolymers to solid-phase **polymn.** using a quaternary phosphonium salt as the **catalyst**. Bisphenol A and di-Ph carbonate were **polymd.** using **tetramethylammonium hydroxide** and tetraphenylphosphonium tetraphenylborate by heating under Ar at 180° for 30 min, 210°/100 mmHg for 30 min, 240°/10 mmHg for 30 min, 270°/2 mmHg for 30 min, then at 270°/0.3 mmHg for 30 min to obtain a transparent **polymer** with viscosity-av. mol. wt. 19,100 and mol. wt. loss 1200 after exposed to 121° steam for 48 h.

L13 ANSWER 98 OF 145 CA COPYRIGHT 2003 ACS

AN 125:144108 CA

TI Manufacture of **polycarbonates** with good transparency by melt condensation

IN Sakashita, Takeshi; Nagai, Takashi; Shimoda, Tomoaki

PA General Electric Company, USA



SO Eur. Pat. Appl., 22 pp.  
 PI EP 719814 A2 19960703 EP 1995-308813 19951206  
 US 5717057 A 19980210 US 1995-581639 19951228  
 PRAI JP 1994-327758 A 19941228  
 AB **Polycarbonates** are prepd. by (1) formation of an addn. compd. of an arom. dihydroxy compd. and an arom. monohydroxy compd., (2) addn. of an alkali metal compd. and/or an alk. earth metal compd. **catalyst**, (3) removal of the arom. monohydroxy compd. from said addn. compd. or mixt., and (4) melt polycondensation of the obtained high purity arom. dihydroxy compd. in the presence of the **catalyst** contained in said arom. dihydroxy compd., with a carbonic acid diester. **Polycarbonates** formed have outstanding properties for molding, including discoloration resistance, thermal stability, transparency, and water resistance. Thus, bisphenol A (99.5% pure) obtained from an addn. compd. of bisphenol A and phenol contg. NaOH **catalyst** was combined with **tetramethylammonium hydroxide catalyst** and di-Ph carbonate and melt **polymd.** to give a **polycarbonate** which after treatment with Bu tosylate exhibited intrinsic viscosity 0.49 dL/g, optical transmittance 90.8%, haze 0.2, and water-resistance haze 1.7.

L13 ANSWER 99 OF 145 CA COPYRIGHT 2003 ACS

AN 125:143606 CA

TI Copolycarbonates having outstanding hardness, their preparation, and compositions containing them

IN Sakashita, Takeshi; Shimoda, Tomoaki; Nagai, Takashi

PA General Electric Company, USA

SO Eur. Pat. Appl., 20 pp.

PI EP 719812 A2 19960703 EP 1995-308814 19951206

US 5646233 A 19970708 US 1995-555100 19951201

PRAI JP 1994-327767 A 19941228

AB **Polycarbonates** prepd. from  $\geq 2$  arom. dihydroxy compds. and di-Ph carbonate in the presence of an alkali metal compd. and/or an alk. earth metal compd. **catalyst** have outstanding hardness (Rockwell M 40-90) in addn. to heat resistance, color matching properties, and transparency. An acidic compd. and, optionally, an epoxy compd. are added to the **polycarbonate** to form the compns. which can be used for outdoor applications without applying a hard coating layer. Thus, 1,1-bis(4-hydroxy-3,5-dimethylphenyl)methane (I) 0.30, bisphenol A 0.30, and di-Ph carbonate were melt **polymd.** in the presence of **tetramethylammonium hydroxide** and NaOH, giving a **polycarbonate** having glass temp. 159° and Rockwell M hardness 58, compared with 149° and 32 for a control prepd. without I.

L13 ANSWER 102 OF 145 CA COPYRIGHT 2003 ACS

AN 125:59435 CA

TI Manufacture of aromatic **polycarbonates** in high productivity with improved color tone and thermal stability

IN Kashiwagi, Takeshi; Kimura, Masatoshi; Kawai, Michio

PA Mitsubishi Chem Corp, Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

PI JP 08081551 A2 19960326 JP 1994-218475 19940913

PRAI JP 1994-218475 19940913

AB The title **polycarbonates** are prepd. by transesterification of carbonate precursors with arom. dihydroxy compds. in the presence of **catalysts** contg. rare earth elements or compds. thereof to form prepolymers having viscosity-av. mol. wt. 1000-20,000 and polycondensing the prepolymers. Thus, 20.0 mol bisphenol A and 21.4 mol Ph<sub>2</sub>CO<sub>3</sub> were copolymd. in the presence of La<sub>2</sub>(CO<sub>3</sub>)<sub>3</sub> at 200-270° and 100-1 mmHg for 3.5 h to give a prepolymer, which was **polymd.** in a self-cleaning high-viscosity reactor with residence time 30 min to give a **polycarbonate** with viscosity-av. mol.

wt. 23,100, color tone (b value) 0.21 as measured by a color computer, and good transparency.

L13 ANSWER 106 OF 145 CA COPYRIGHT 2003 ACS  
AN 124:233427 CA  
TI Preparation of **polycarbonates** using quaternary ammonium hydroxide **catalysts**  
IN Ito, Mitsunori  
PA Idemitsu Kosan Co, Japan  
SO Jpn. Kokai Tokkyo Koho, 12 pp.  
PI JP 07316279 A2 19951205 JP 1994-116406 19940530  
PRAI JP 1994-116406 19940530  
AB Title **polymers**, with good heat and hydrolysis resistance, are prep'd. by transesterification with dihydroxy compds. in the presence of **catalysts** comprising R<sub>1</sub>4NOH (R<sub>1</sub> = C<sub>1</sub>-4 alkyl) and R<sub>2</sub>4NOH and/or R<sub>3</sub>nR<sub>4</sub>4-nNOH [R<sub>2</sub>, R<sub>3</sub> = C<sub>5</sub>-20 (cyclo)alkyl, C<sub>6</sub>-20 aryl, C<sub>7</sub>-20 alkylaryl or aralkyl, C<sub>5</sub>-20 heterocyclic group; R<sub>4</sub> = C<sub>1</sub>-4 alkyl; n = 1-3]. Thus, 22.8 g bisphenol A, 23.5 g Ph<sub>2</sub>CO<sub>3</sub>, Me<sub>4</sub>NOH, and PhMe<sub>3</sub>NOH were heated to give **polycarbonate** with viscosity-av. mol. wt. 17,800 and good transparency after 48 h in steam at 121°.

L13 ANSWER 110 OF 145 CA COPYRIGHT 2003 ACS  
AN 123:314840 CA  
TI Process for the production of aromatic **polycarbonates**  
IN Sasaki, Katsushi; Funakoshi, Wataru; Hirata, Masumi; Abe, Masanori; Kaneko, Hiroaki  
PA Teijin Ltd., Japan  
SO Eur. Pat. Appl., 28 pp.  
PI EP 667366 A2 19950816 EP 1995-300780 19950208  
US 5516878 A 19960514 US 1995-386086 19950209  
PRAI JP 1994-16186 A 19940210  
AB Arom. **polycarbonates** are prep'd. from arom. dihydroxy compds. and diaryl carbonates in the presence of **catalysts** selected from alkali metal salts of ate-complexes of metals, i.e., Si, Ge, Sn, or Pb and alkali metal salts of oxoacids of the metals. Thus, bisphenol A-di-Ph carbonate copolymer was prep'd. using an Na<sub>2</sub>GeO<sub>3</sub> **catalyst**.

L13 ANSWER 111 OF 145 CA COPYRIGHT 2003 ACS  
AN 123:287325 CA  
TI Manufacture of aromatic **polycarbonates**  
IN Yokoyama, Masuzo; Yoshitoku, Hiroo; Takano, Junshi; Nagaoka, Michihiro; Fujita, Masaru  
PA Mitsubishi Kagaku Kk, Japan  
SO Jpn. Kokai Tokkyo Koho, 8 pp.  
PI JP 07165904 A2 19950627 JP 1993-312198 19931213  
PRAI JP 1993-312198 19931213  
AB Title heat-resistant **polycarbonates** with improved color are prep'd. from arom. diols and carbonate diesters by transesterification in the presence of Cs salts and NR<sub>1</sub>R<sub>2</sub>R<sub>3</sub>R<sub>4</sub>+ X- (R<sub>1</sub>-4 = C<sub>1</sub>-8 alkyl, aryl, aralkyl, cycloalkyl; X = OH, Cl, Br). Thus, 1.50 mol bisphenol A and 1.61 mol di-Ph carbonate were heated in the presence of Cs<sub>2</sub>CO<sub>3</sub> and Me<sub>4</sub>NOH at 210-240° in vacuo for >4 h then the resulted prepolymer was kneaded at 270° to give title **polycarbonate** with wt. av. mol. wt. 23,500, good heat resistance, and improved color.

L13 ANSWER 112 OF 145 CA COPYRIGHT 2003 ACS  
AN 123:287322 CA  
TI Manufacture of **polycarbonates** with high quality  
IN Ito, Mitsunori

PA Idemitsu Kosan Co, Japan  
 SO Jpn. Kokai Tokkyo Koho, 9 pp.  
 PI JP 07145235 A2 19950606 JP 1993-291798 19931122  
 PRAI JP 1993-291798 19931122  
 AB The process comprises transesterification of dihydroxy compds. with carbonate diesters in the presence of **polymn. catalysts** contg. Al compds. and basic org. compds. Thus, bisphenol A 0.1, di-Ph carbonate 0.1, and Al(OH)<sub>3</sub>  $1 \times 10^{-5}$  mol and 6  $\mu$ L 15% Me<sub>4</sub>N<sup>+</sup>OH<sup>-</sup> ( $1 \times 10^{-5}$  mol Me<sub>4</sub>N<sup>+</sup>OH<sup>-</sup>) aq. soln. were mixed, the inner pressure was lowered slowly to 1 mmHg at 240° under Ar, and the **polymn.** was continued at 270° for 120 min to obtain a **polycarbonate** with viscosity-av. mol. wt. 22,000. A 3-mm plate of the **polymer** showed no change after being exposed to 121° steam for 48 h.

L13 ANSWER 120 OF 145 CA COPYRIGHT 2003 ACS  
 AN 123:10272 CA  
 TI Manufacture of **polycarbonates**  
 IN Kuze, Shigeki  
 PA Idemitsu Petrochemical Co., Ltd., Japan  
 SO PCT Int. Appl., 32 pp.  
 PI WO 9504770 A1 19950216 WO 1994-JP1303 19940805  
 PRAI JP 1993-214800 19930809  
 AB **Polycarbonates** are manufd. by the transesterification of a dihydroxy compd. and a carbonic diester using a **catalyst** including an active hydrogen-contg. nitrogen-contg. heterocyclic compd., a metallic compd., and optionally a nitrogen-contg. basic org. compd. The manufg. process includes a pre-treatment of the dihydroxy compd. or the diester with the **catalyst** and the following **polymn.** The obtained **polycarbonate** is colorless and resistant to hydrolysis.

L13 ANSWER 123 OF 145 CA COPYRIGHT 2003 ACS  
 AN 122:188437 CA  
 TI Preparation of aromatic **polycarbonates** with good hue and rapid **polymerization** speed by melt **polymerization**  
 IN Enomori, Masatsugu; Matsumura, Shunichi; Funakoshi, Wataru; Sasaki, Katsuji  
 PA Teijin Ltd, Japan  
 SO Jpn. Kokai Tokkyo Koho, 9 pp.  
 PI JP 06329783 A2 19941129 JP 1993-122743 19930525  
 PRAI JP 1993-122743 19930525  
 AB Title **polycarbonates** are prepd. by melt-**polymg.** arom. dihydroxy compds. and diaryl carbonates in the presence of **catalysts** from (A) alkali metal compds. and/or alk. earth metal compds., (B) Al(OR)<sub>3</sub> (R = C<sub>1</sub>-20 monovalent hydrocarbyl), and (C)  $\geq 1$  compd. chosen from N-contg. basic compds., P-contg. basic compds., and boric acid derivs. Thus, 68.48 parts bisphenol A and 67.48 parts di-Ph carbonate were melt-**polymd.** in the presence of bisphenol A 2Na salt  $1.0 \times 10^{-5}$ , Al(OEt)<sub>3</sub>  $1.0 \times 10^{-4}$ , and Me<sub>4</sub>NOH  $2.5 \times 10^{-4}$  mol/l mol-bisphenol A at 180° under 30 mmHg for 45 min and at 180° under 15 mmHg for 30 min, heated to 290° for 45 min, and further **polymd.** at 290° under  $\leq 1$  mmHg for 20 min to give a colorless transparent **polycarbonate** with rapid **polymn.** speed.

L13 ANSWER 125 OF 145 CA COPYRIGHT 2003 ACS  
 AN 122:134219 CA  
 TI Manufacture of aromatic **polycarbonates**  
 IN Tominari, Kenichi; Kanazawa, Akio; Sakashita, Takeshi; Miura, Kimyoshi; Shimoda, Tomoaki  
 PA Ge Plastics Japan Ltd, Japan  
 SO Jpn. Kokai Tokkyo Koho, 11 pp.  
 PI JP 06234845 A2 19940823 JP 1993-342116 19931214

US 5525701 A 19960611 US 1994-353857 19941212  
PRAI JP 1992-353722 A 19921215  
AB **Polycarbonates** are manufd. by condensing dihydroxy arom. compds. with diesters of carbonic acid in the presence of **catalysts** such as basic nitrogen-contg. compds., alkali or alk. earth metal compds., and boric acid or borates. In order to produce **polymers** with good transparency, the condensation reaction is carried out in two serially connected reactors; there is at least 1 filter installed in front of the inlet and/or outlet of the second reactor. Bisphenol A **polycarbonate** was manufd.

L13 ANSWER 126 OF 145 CA COPYRIGHT 2003 ACS  
AN 122:56864 CA  
TI Heat-resistant transparent copolycarbonates with good color and compositions and manufacture thereof  
IN Sakashita, Takeshi; Nagai, Koji; Shimoda, Tomoaki  
PA Nippon Jiii Purasuchitsukusu, Japan  
SO Jpn. Kokai Tokkyo Koho, 17 pp.  
PI JP 06192411 A2 19940712 JP 1992-344003 19921224  
PRAI JP 1992-344003 19921224  
AB The title **polymers** contain arom. diol-derived units I and II [X = CR<sub>3</sub>R<sub>4</sub>, C(:R<sub>5</sub>), O, S, SO, SO<sub>2</sub>; R<sub>1</sub>, R<sub>2</sub>, R<sub>6-10</sub> = C<sub>1-10</sub> (halo)hydrocarbyl, halogen; R<sub>3</sub>, R<sub>4</sub> = H, hydrocarbyl; R<sub>5</sub> = divalent hydrocarbyl; k, l, m, n = 0-4] and are prepd. by melt **polymn.** in the presence of an alkali metal or alk. earth metal compd, and optionally a N-contg. basic compd. and boric acid. A copolycarbonate with Tg 182° and yellowness index 1.9 was prepd. from bisphenol A, 9,9-bis(4-hydroxyphenyl)fluorene, and di-Ph carbonate in the presence of NaOH, **tetramethylammonium hydroxide**, and boric acid.

L13 ANSWER 133 OF 145 CA COPYRIGHT 2003 ACS  
AN 119:96473 CA  
TI Preparation of **polycarbonates**  
IN Sakashita, Takeshi; Kishimura, Kotaro; Shimoda, Tomoaki  
PA Nihon GE Plastics, Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 16 pp.  
PI JP 05017564 A2 19930126 JP 1991-148851 19910620  
PRAI JP 1991-148851 19910620  
AB The title **polymers** having good transparency and thermal stability are prepd. in a 2-stage or multistage process by melt polycondensation of arom. dihydroxy compds. with carbonic acid diesters in the presence of (A) basic N-contg. compds., and adding A for ≥1 time in the **polymn.** steps. Thus, heating 440 mol bisphenol A with 460 mol di-Ph carbonate, 44 mmol Me<sub>4</sub>NOH, and 0.088 mmol NaOH at 140° for 30 min, heating to 210°, adding 66 mmol Me<sub>4</sub>NOH, heating, and extruding the resulting **polymer** with Bu p-toluenesulfonate 0.7, Mark 2112 [tris(2,4-di-tert-butylphenyl)phosphite] 300, and 3,4-epoxycyclohexylmethyl 3',4'-epoxycyclohexanecarboxylate (Celloxide 2021P) 300 ppm gave pellets having good melt stability and yellowing and water resistance.

L13 ANSWER 134 OF 145 CA COPYRIGHT 2003 ACS  
AN 118:192520 CA  
TI Copolymerization method of producing **polycarbonates** with improved flow and formability  
IN Sakashita, Takeshi; Nagai, Takashi; Shimoda, Tomaki  
PA Ge Plastics Japan Ltd., Japan  
SO Eur. Pat. Appl., 17 pp.  
PI EP 508775 A2 19921014 EP 1992-303161 19920409  
US 5384388 A 19950124 US 1993-116304 19930903  
US 5405933 A 19950411 US 1993-119317 19930909

PRAI JP 1991-76478 19910409  
AB The title method comprises melt polycondensation of  $\geq 2$  arom. dihydroxy compds. contg. 2-90 mol.% of (un)substituted resorcin with a carbonate diester in the presence of an alkali metal and/or alk. earth metal **catalyst** and, optionally, of a N-contg. base and/or  $H_3BO_3$  or a borate ester. The reaction products are optionally blended with an acidic or epoxy compd. and subjected to vacuum treatment. The title **polycarbonates** have good mech. properties, heat resistance, transparency, and color tone.

L13 ANSWER 135 OF 145 CA COPYRIGHT 2003 ACS

AN 118:170365 CA

TI Manufacture of **polycarbonates** with good water resistance, transparency, and hue and heat stability in molding

IN Sakashita, Takeshita; Shimoda, Tomoaki

PA GE Plastics Japan Ltd., Japan

SO Eur. Pat. Appl., 19 pp.

PI EP 520805 A2 19921230 EP 1992-305879 19920625

US 5306801 A 19940426 US 1992-903320 19920624

PRAI JP 1991-159144 19910628

AB **Polycarbonates** with the title properties are manufd. by **polymn.** of arom. diols with diester carbonates in the presence of  $5 \times 10^{-8}$ - $8 \times 10^{-7}$  mol alkali or alk.-earth metal compds./mol arom. diol and addn. of benzenesulfonic acids or their (halo-substituted) C1-8 hydrocarbyl esters optionally having  $\leq 3$  (halo-substituted) C1-6 hydrocarbyl substituents on the ring and optionally epoxy and P compds. Thus, **polymn.** of bisphenol A (I) with  $Ph_2CO_3$  in the presence of  $4 \times 10^{-7}$  and  $2.5 \times 10^{-4}$  mol NaOH and  $Me_4OH/I$ , resp., and addn. of Bu p-toluenesulfonate gave a product that exhibited yellowness index 1.41 after injection molding at cycle time 45 s and cylinder and mold temp. 290 and 100°, resp., and 1.51 after injection molding at cycle time 15 min and cylinder and mold temp. 320 and 100°, resp.

L13 ANSWER 136 OF 145 CA COPYRIGHT 2003 ACS

AN 117:112261 CA

TI **Catalysts** for the manufacture of **polycarbonates**

IN Sakashita, Takeshi; Kishimura, Kotaro

PA Nippon GE Plastics K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

PI JP 04089824 A2 19920324 JP 1990-207077 19900803

PRAI JP 1990-207077 19900803

AB **Polycarbonates** are prepd. from arom. dihydroxy compds., carbonic acid diesters, and 0.001-0.003 mol compds. having  $\geq 3$  functional groups using N-contg. basic compds., alkali metal or alk. earth metal compds., and optionally boric acid or boric acid esters as **catalysts**. Thus, bisphenol A-1,1,1-tris(4-hydroxyphenyl)ethane-diphenyl carbonate copolymer was prepd. using **tetramethylammonium hydroxide**, NaOH, and boric acid as **catalysts**.

L13 ANSWER 137 OF 145 CA COPYRIGHT 2003 ACS

AN 117:9115 CA

TI Aromatic **polycarbonate** resin compositions

IN Yoshida, Yumiko; Itoi, Hideyuki; Saito, Akihiro

PA Nihon GE Plastics, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

PI JP 04036346 A2 19920206 JP 1990-142842 19900531

PRAI JP 1990-142842 19900531

AB Arom. dihydroxy compds. and carbonic acyl diesters are **polymd.** in the presence of N-contg. basic compds., alkali metal compds. or alk. earth metal compds., and maleic acid or its esters to prep. **polycarbonates** which

(100 parts) are mixed with 0.005-0.5 parts P compd. antioxidants, phenolic antioxidants, and/or epoxy stabilizers to prep. compns. having low yellowing, good transparency, and good stability. Thus, bisphenol A and  $\text{Ph}_2\text{CO}_3$  were **polymd.** in the presence of  $\text{Me}_4\text{N}^+ \text{OH}^-$ ,  $\text{NaOH}$ , and boric acid to give a **polycarbonate** which (100 parts) was mixed with 0.05 parts Mark 2112 and extruded.

**L13 ANSWER 138 OF 145 CA COPYRIGHT 2003 ACS**

AN 116:152534 CA

TI Transesterification chemistry: low temperature reactions of o-nitrophenyl carbonates

AU Brunelle, Daniel J.

CS Res. Dev. Cent., Gen. Electr., Schenectady, NY, 12301, USA

SO Macromolecular Reports (1991), A28(Suppl. 2), 95-102

AB Bis(o-nitrophenyl)carbonate (I) is polycondensed with bisphenol A or other diols to prep. **polycarbonates**. The I can be used in more mild conditions than carbonic acid. The kinetics of the polycondensation as a function of different **catalysts** are **examd.**

**L13 ANSWER 139 OF 145 CA COPYRIGHT 2003 ACS**

AN 116:7092 CA

TI Preparation of **polycarbonate**-polyesters

IN Sakashita, Takeshi; Shimoda, Tomoaki; Kishimura, Kotaro

PA Nihon GE Plastics, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 16 pp.

PI JP 03203926 A2 19910905 JP 1989-340289 19891229

PRAI JP 1989-340289 19891229

AB The **polymers**, with good color, heat resistance, and mech. properties, are prepd. by polycondensation of arom. dihydroxy compds. with carbonic acid diesters and aliph. dicarboxylic acids and/or their esters in the presence of a **catalyst** compn. contg.  $<10^{-4}$  mol (based on dihydroxy compds.) alkali metal compds. or alk. earth metal compds., optionally together with basic N compds. and/or boric acid or borate esters. Thus, heating di-Ph dodecanedioate 0.02, di-Ph carbonate 0.204, and bisphenol A 0.2 mol with 0.031 mg  $\text{H}_3\text{BO}_3$  at  $180^\circ$  for 30 min under N, adding 30.3 mg 15% aq.  $\text{Me}_4\text{N}^+ \text{OH}^-$  soln. and 0.008 mg  $\text{NaOH}$ , and **polymg.** gave **polymers** having yellowing index 1.90, intrinsic viscosity (0.5 g/dL  $\text{CH}_2\text{Cl}_2$ ,  $20^\circ$ ) 0.54 dL/g, and no change in  $80^\circ$  water for 24 h.

**AL13 ANSWER 140 OF 145 CA COPYRIGHT 2003 ACS**

AN 115:256961 CA

TI Manufacture of aromatic **polycarbonates**, and the resulting compositions

IN Sakashita, Takeshi; Shimoda, Tomoaki; Itoi, Hideyuki; Nagai, Takashi; Kishimura, Kotarou

PA Nihon GE Plastics, Ltd., Japan

SO Eur. Pat. Appl., 29 pp.

PI EP 435124 A2 19910703 EP 1990-124430 19901217

US 5606007 A 19970225 US 1993-67245 19930521

PRAI JP 1989-344042 A 19891228

AB **Polycarbonates** with excellent heat, water, and weather resistance are produced by transesterification of arom. dihydroxy compds. with carbonic acid diesters in the presence of alk. **catalysts**, followed by treatment with acids, and optionally epoxy compds., to neutralize the **catalyst**. **Polymn.** of 0.44 kmol bisphenol A with 0.45 kmol di-Ph carbonate at  $240^\circ$  under vacuum in the presence of boric acid,  $\text{Me}_4\text{NOH}$ , and  $\text{NaOH}$ , and addn. of  $\text{H}_3\text{PO}_3$  (5 mol/mol Na) gave **polycarbonate** with initial melt flow rate (1.2 kg,  $300^\circ$ , JIS K 7210) 16.9 g/10 min (18.5 g/10 min after 15 min at  $320^\circ$ ), vs 20.6 (27.1) without  $\text{H}_3\text{PO}_3$ .

FL13 ANSWER 142 OF 145 CA COPYRIGHT 2003 ACS

AN 113:116110 CA

TI Process for the production of **polycarbonates**

IN Sakashita, Takeshi; Shimoda, Tomoaki

PA GE Plastics Japan Ltd., Japan

SO Eur. Pat. Appl., 26 pp.

PI EP 360578 A2 19900328 EP 1989-309548 19890920

US 5151491 A 19920929 US 1989-410464 19890921

PRAI JP 1988-238428 A 19880922

AB Polycondensates of arom. diols (A) and carbonic acid diesters (B) with terminal OH groups  $\leq 30\%$ , Na content  $\leq 1$  ppm, and Cl content  $\leq 20$  ppm have good resistance to heat and water, and are prepd. by using **catalysts** comprising (a) N-contg. basic compds.; (b) alkali or alk. earth metal compds. (10-8-10-3 mol/mol A), and (c) boric acid or esters in the presence of a C10-40 phenol or a C13-50 B. Thus, a mixt. of di-Ph carbonate (Na content  $\leq 0.05$  ppm, Cl content 24.0 ppm) 47.08, bisphenol A (Na content  $\leq 0.05$  ppm, Cl content 16.4 ppm), and p-cuprylphenol 2.12 g contg. 3.72 mg H<sub>3</sub>BO<sub>3</sub> was heated to 180°, stirred 30 min, combined with 36.48 mg 15% aq. soln. of Me<sub>4</sub>NOH and 0.50 mg NaHCO<sub>3</sub>, and heated at a specified sequences to prep. a **polycarbonate** with terminal OH 0%, and excellent heat and water resistance.

FL13 ANSWER 143 OF 145 CA COPYRIGHT 2003 ACS

AN 112:199387 CA

TI Process and **catalysts** for the preparation of aromatic **polycarbonates** with low color

IN Sakashita, Takeshi; Shimoda, Tomoaki

PA GE Plastics Japan Ltd., Japan

SO Eur. Pat. Appl., 21 pp.

PI EP 351168 A2 19900117 EP 1989-306982 19890710

US 5097002 A 19920317 US 1991-698106 19910510

PRAI JP 1988-172297 A 19880711

AB The title **polycarbonates**, with good heat and water resistance, are prepd. by transesterification of arom. diols with carbonate diesters (overall hydrolyzable Cl content  $\leq 3$  ppm) in the presence of **catalysts** contg. a basic N compds., alkali metal or alk. earth salts of arom. diols, and optionally H<sub>3</sub>BO<sub>3</sub> or borate esters. Stirring 51.36 g (PhO)<sub>2</sub>CO (hydrolyzable Cl 0.3 ppm), 45.6 g bisphenol A (hydrolyzable Cl 0.2 ppm), 3.1 mg H<sub>3</sub>BO<sub>3</sub>, 30.4 mg 15% Me<sub>4</sub>NOH, and 0.42 mg NaHCO<sub>3</sub> for 30 min at 180° and 6 h at 210°-270°/200-0.5 mm gave a **polycarbonate** with intrinsic viscosity 0.55 and yellowness index 1.3.

L13 ANSWER 144 OF 145 CA COPYRIGHT 2003 ACS

AN 107:78485 CA

TI Method for controlling **polymerization** rate of cyclic **polycarbonate** oligomers with pretreated **catalyst**

IN Evans, Thomas L.; Williams, David A.

PA General Electric Co., USA

SO U.S., 8 pp.

PI US 4650852 A 19870317 US 1985-756213 19850718

PRAI US 1985-756213 19850718

AB A process for prepg. linear **polycarbonate** resins comprises modifying a **polycarbonate** formation **catalyst** by contacting it with  $\geq 1$  diaryl carbonate at 150-300°, and contacting a cyclic **polycarbonate** oligomer having structural units -Y1R1Y1CO- (R1 = divalent aliph., alicyclic, or arom. radical; Y1 = O, S) with the modified **catalyst** at  $\leq 350^\circ$ . This modification decreases the **polymn.** rate or introduces an induction period into the **polymn.** reaction. A 100 mmol/L bisphenol A bischloroformate (I) CH<sub>2</sub>Cl<sub>2</sub>

soln. (contg. 2 mmol I) reacted with 4.8 mmol of 0.313 M aq. NaOH and Et3N (Et3N/I molar ratio 0.5) at 20°, for 30 min produced 97% cyclic oligomer (II). A mixt. of 0.6 mg (PhO)2CO, 10 µL of a 0.1 M triethanolamine titanium isopropoxide soln. in PhMe, and 2 mL of anhyd. 2,4-Cl2C6H3Me was refluxed for 1 h, 1 g II (3.94 mmol) was added with an addnl. 8 mL 2,4-Cl2C6H3Me. This reaction produced ~39% linear **polymer** in ~3 h, vs. <1.9 h for a control **polymn.** not employing a treated **polycarbonate** formation **catalyst**.

L13 ANSWER 145 OF 145 CA COPYRIGHT 2003 ACS

AN 102:149947 CA

TI Boron- and nitrogen-containing compositions for **polycarbonate** and polyester-**polycarbonate** synthesis

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SO Eur. Pat. Appl., 14 pp.

PI EP 130512 A2 19850109 EP 1984-107239 19840623

US 4590257 A 19860520 US 1983-510500 19830705

PRAI US 1983-510500 19830705

AB **Polycarbonates** are prepd. by transesterification of diaryl carbonates with bisphenols in the presence of **catalysts** contg. quaternary ammonium hydroxides and borate esters. Thus, (PhO)2CO 1.066, bisphenol A 1, and (MeO)3B [121-43-7] 0.01 mol were heated 0.5 h at 180°, mixed with 0.01 mol Me4NOH [75-59-2], heated 0.5 h at 180° and 1.5 h at 240°/760-10 mm, pulverized, and heated 1 h at 275-285°/0.3 mm to give a **polycarbonate** [24936-68-3] with mol. wt. 70,650 and 43,900 after 0 and 16 h, resp., at 250°.

=> log y

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